



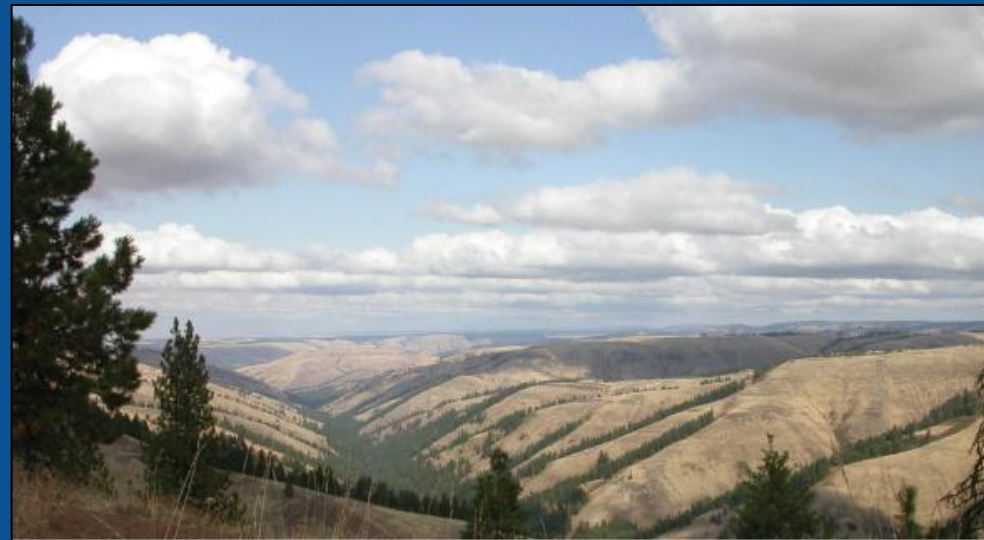
***Independent Scientific
Advisory Board:
Northwest Power and
Conservation Council, NOAA
Fisheries and the Columbia
River Indian Tribes***

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Using a Comprehensive
Landscape Approach
for More Effective
Conservation and Restoration



Independent Scientific Advisory Board
ISAB 2011-4 | September 30, 2011

Report Objectives & Focus

- Distill current concepts and understandings of critical processes shaping landscapes and their associated fish & wildlife populations
- Synthesize best approaches for conserving and restoring self-sustaining CRB fish & wildlife populations

Focus: *Landscapes as integrated ecological - socioeconomic systems*

- **Overview of recommendations**

 - Criteria for a landscape approach**
 - Seven recommendations**

- **Focus on two recommendations**

 - Reinvigorate adaptive management**
 - Rebalance vision for restoration**

- **Overview of a landscape ecological perspective**

 - Science perspective on diversity**
 - Challenges to implementation**



Criteria for a Landscape Approach

1. Broaden Socioeconomic Engagement



2. Build Strategic Approach from Landscape Ecology Perspective

3. Organize for Integration and Collaboration



4. Promote Adaptive Capacity, Use Adaptive Management

Recommendations for a Landscape Approach

1. Build Broader Public Support
2. Rebalance the Vision for Restoration
3. Establish Leadership in Linking Science & Management
4. Work Across Boundaries
5. Reinvigorate and Extend Adaptive Management
6. Develop Best Practices
7. Strengthen Social Science Participation in ISAB & IEAB



Common Comments on Adaptive Management

- “... in both scientific literature and land management ... are very few examples where the approach has been applied in its entirety to real-world conservation problems.” (Keith et al. 2011).
- “... it remains primarily an ideal rather than a demonstrated reality” (George Stankey 2007:56)
- “... conflicts over ecological values are likely to be one of the main impediments to policy design for adaptive management and ecosystem restoration” (Carl Walters 1997).

Recommendation 5: Reinvigorate and Extend Adaptive Management

- ✓ Worry less about experimenting & testing boundaries; do more testing of assumptions and interactions
- ✓ Include the public in all phases of adaptive management
- ✓ Create opportunities for active engagement and education



- ✓ Recognize the road to adaptive management has many forks

Promoting Adaptive Capacity: Greater Public Engagement in Adaptive Management Cycle

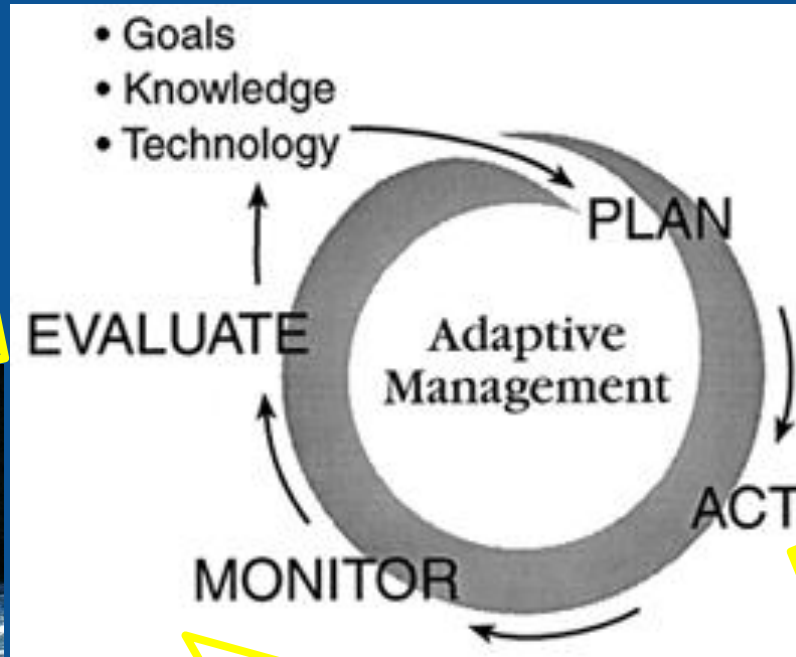
Disseminate lessons learned

Include active education



Get volunteers

Save \$ & engage in citizen science



Public review

Invite early public participation

Involve landowners & managers

Identify guidelines & best practices

Recommendation 2: Rebalance the Vision for Restoration

- Focus on abundance and *diversity*
- Abundance is well understood;
diversity less so

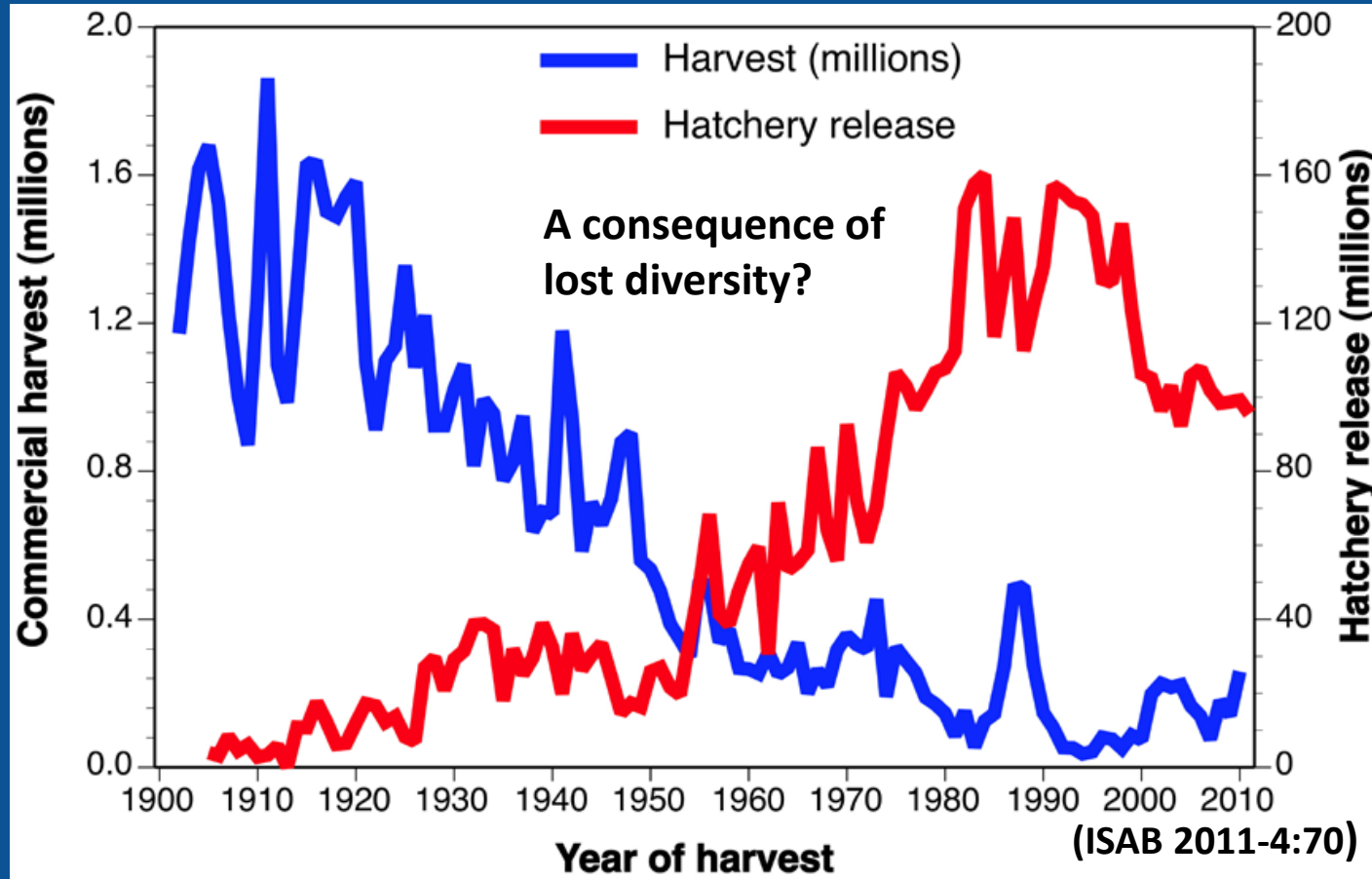
Elements of Diversity

- Phenotypic and life history diversity
- Genetic diversity
- Taxonomic diversity
- Ecological or functional diversity

“... most current actions to restore the Basin focus largely on abundance; abundance also is the overwhelming emphasis of monitoring and evaluation programs.”

(ISAB 2011-4:67)

Our Thought Process: An Example

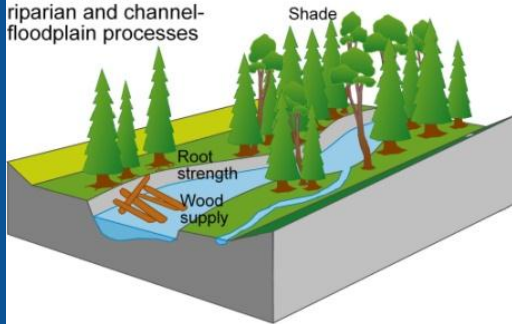


"However beautiful the strategy, you should occasionally look at the results." - Winston Churchill

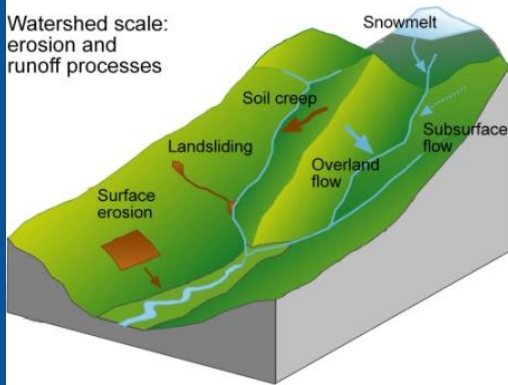
Ecological and Functional Diversity in a Landscape

Landscape processes create habitats and a “template” for diversity

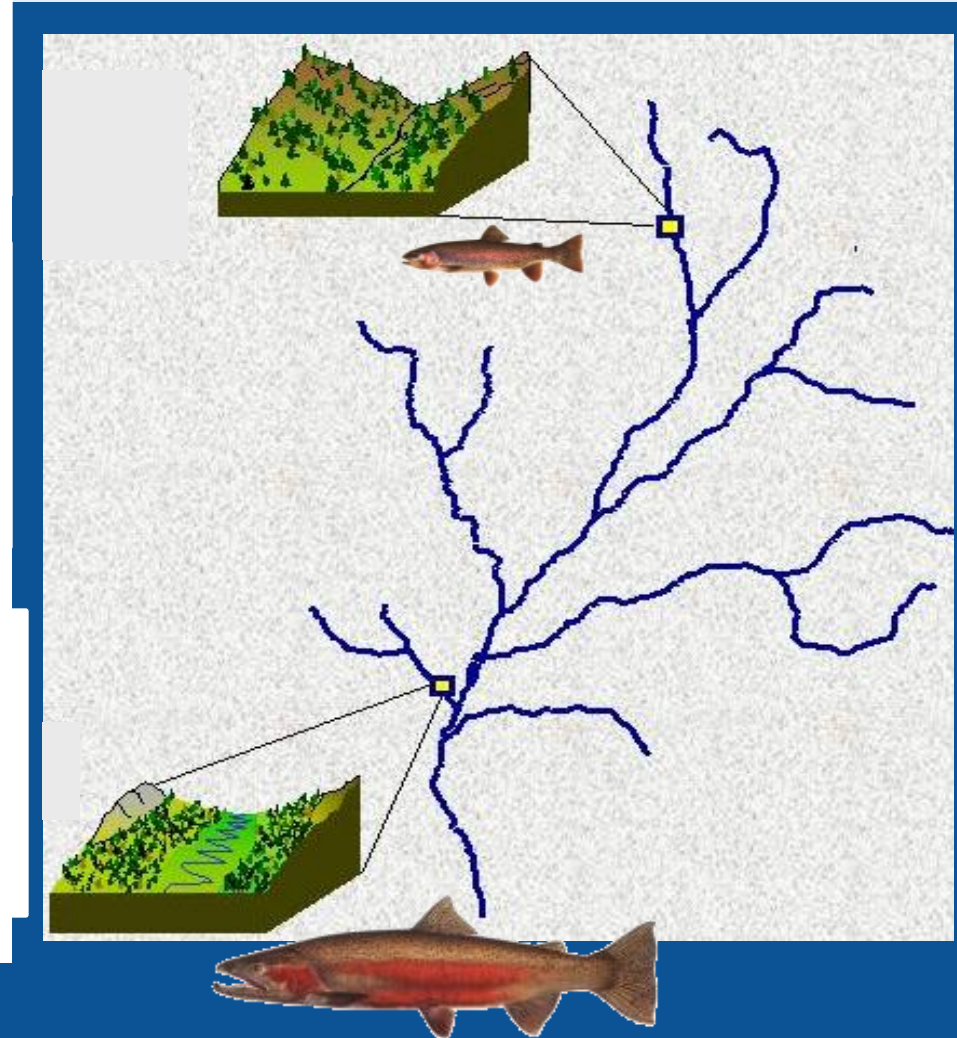
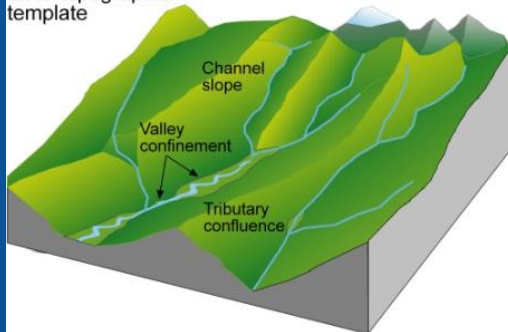
Reach scale:
riparian and channel-
floodplain processes



Watershed scale:
erosion and
runoff processes

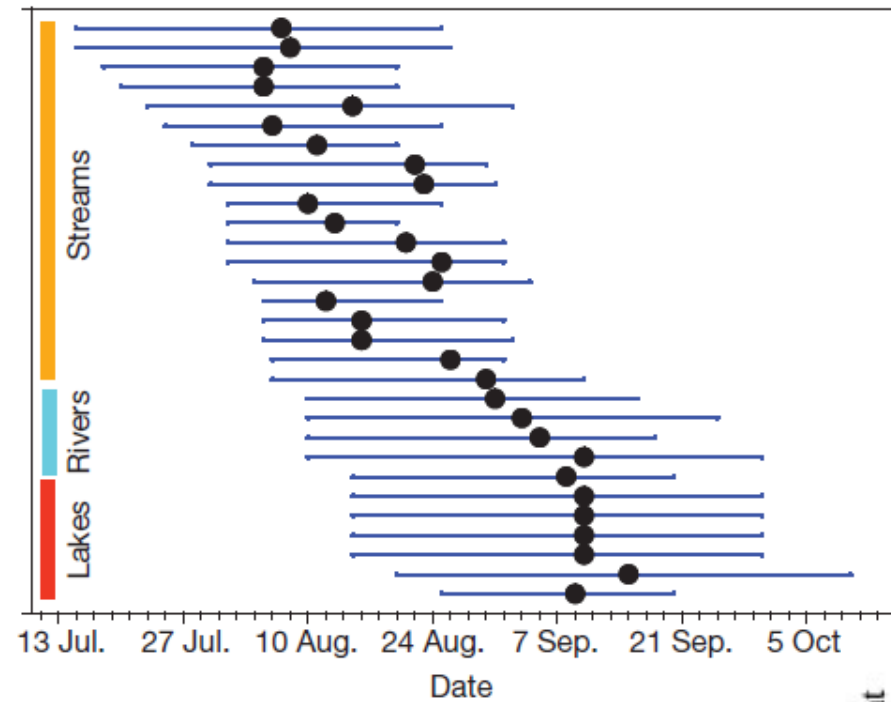


Litho-topographic
template



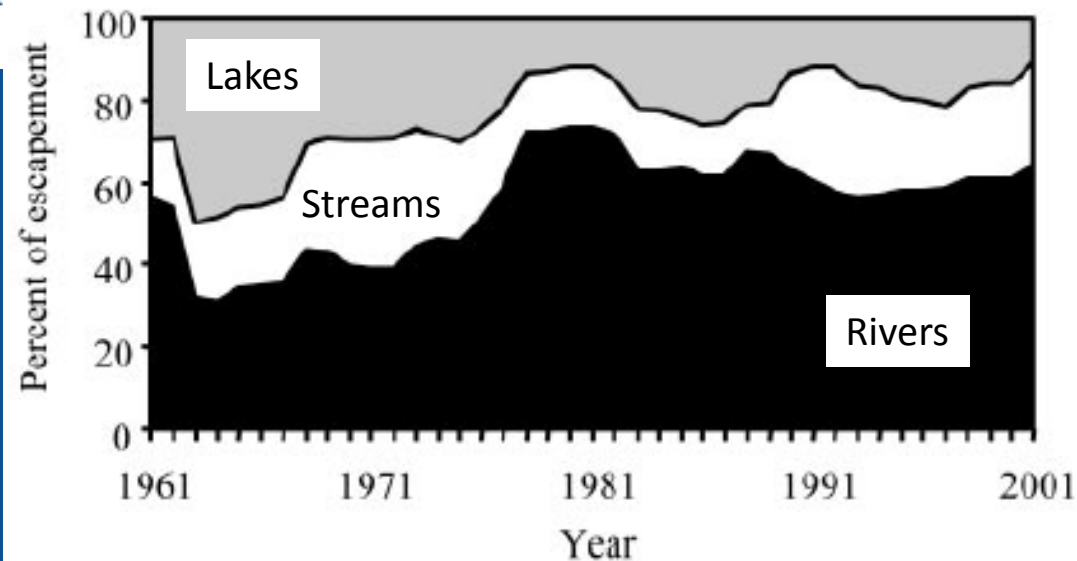
Ecological and Functional Diversity in a Landscape

*Diversity is critical to resilience
the “portfolio effect”*



Schindler et al. 2010

Hilborn et al. 2003



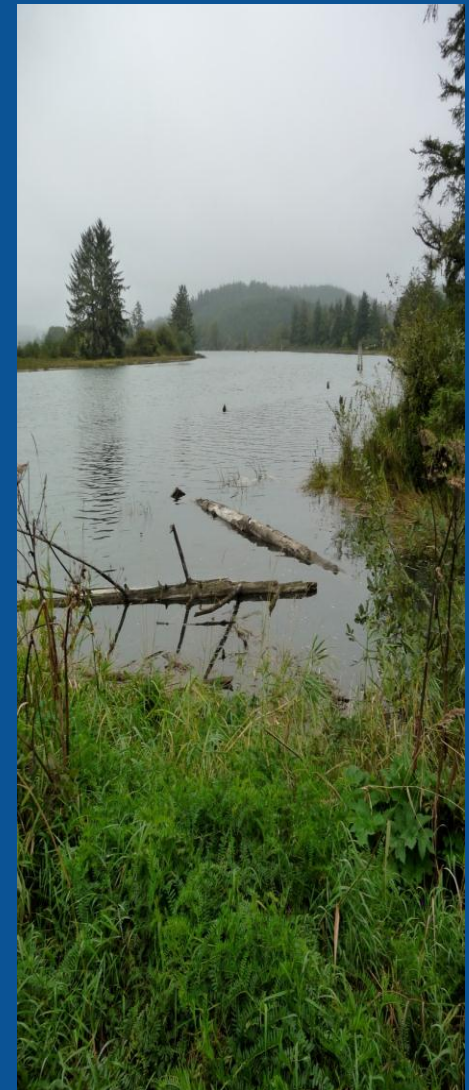
Recommendation 2: Rebalance the Vision for Restoration

What to look for in a strategy:

A broad spatial and temporal context for restoration actions

Links between abundance, diversity & productivity, and the size, extent and connections of habitat required for resilience

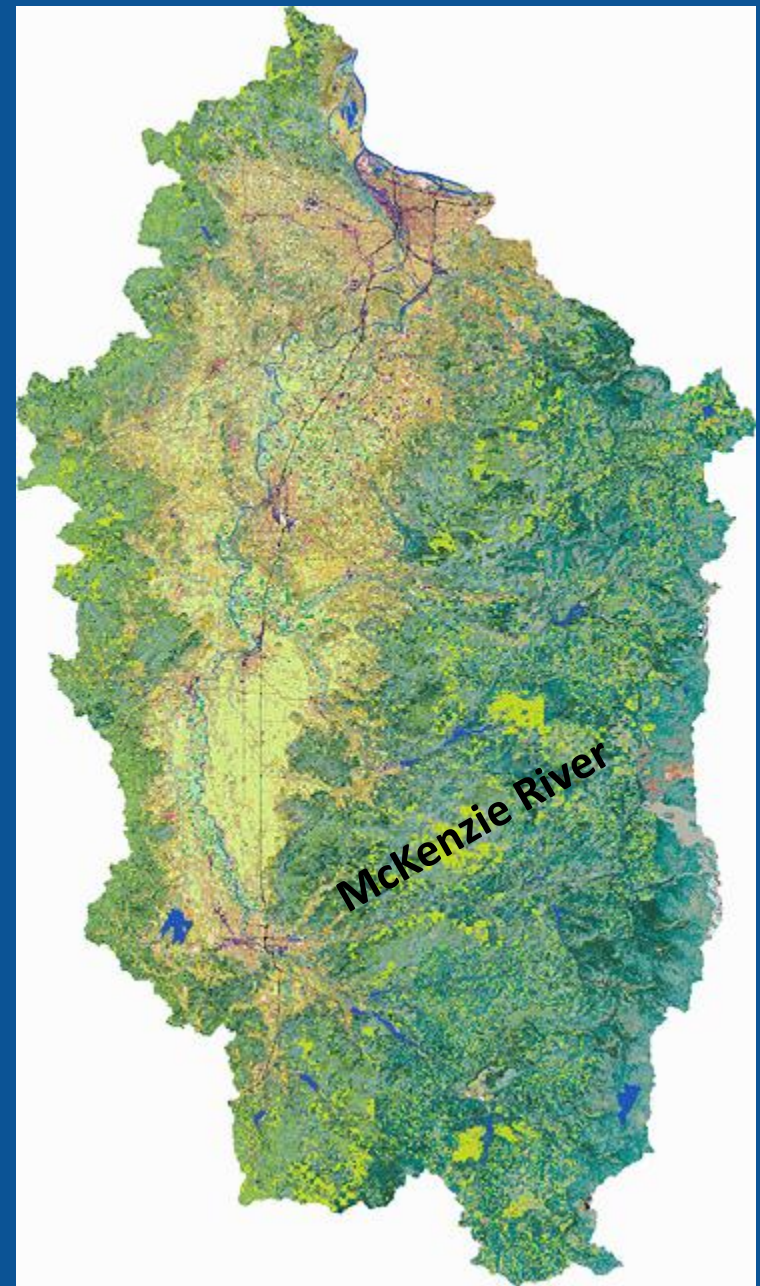
Prioritization of restoration within this context; focus on degradation sources, critical habitat processes, building from strengths or anticipated potential



Biotic Diversity Ultimately Depends on the Maintenance of Landscape Diversity

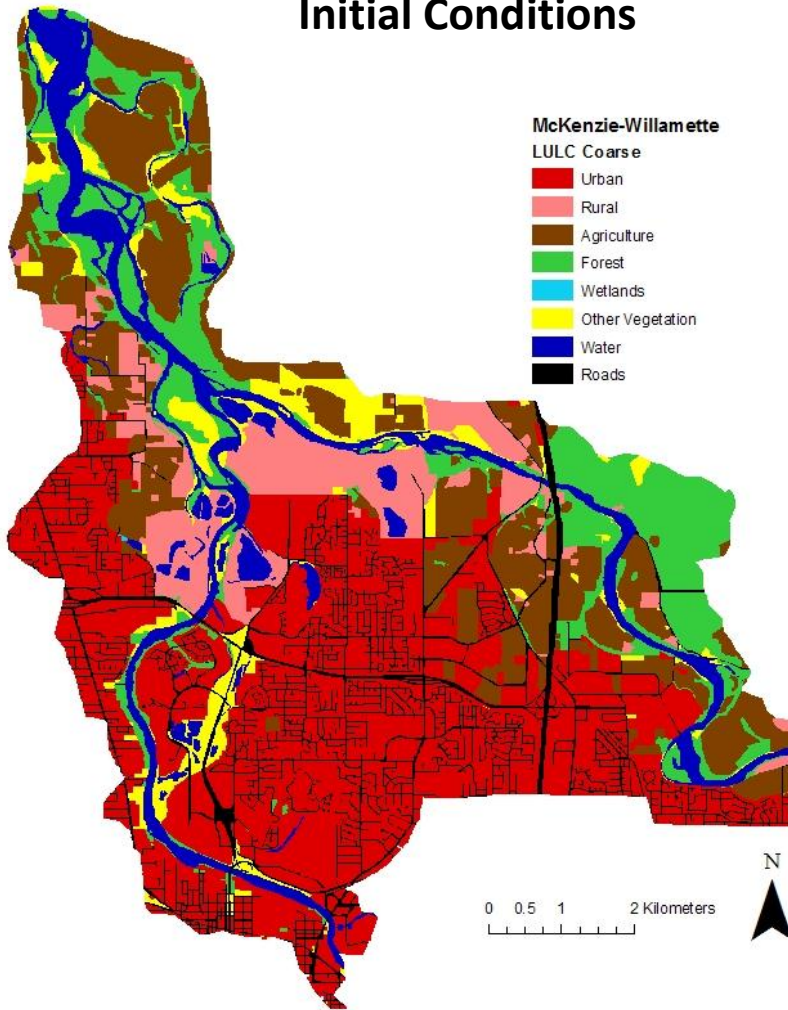
The first step is perceptual

Engage, do science, collaborate and adaptively manage at a landscape scale. For example, consider ENVISION – a simulation about urban growth (Guzy et al. 2008)

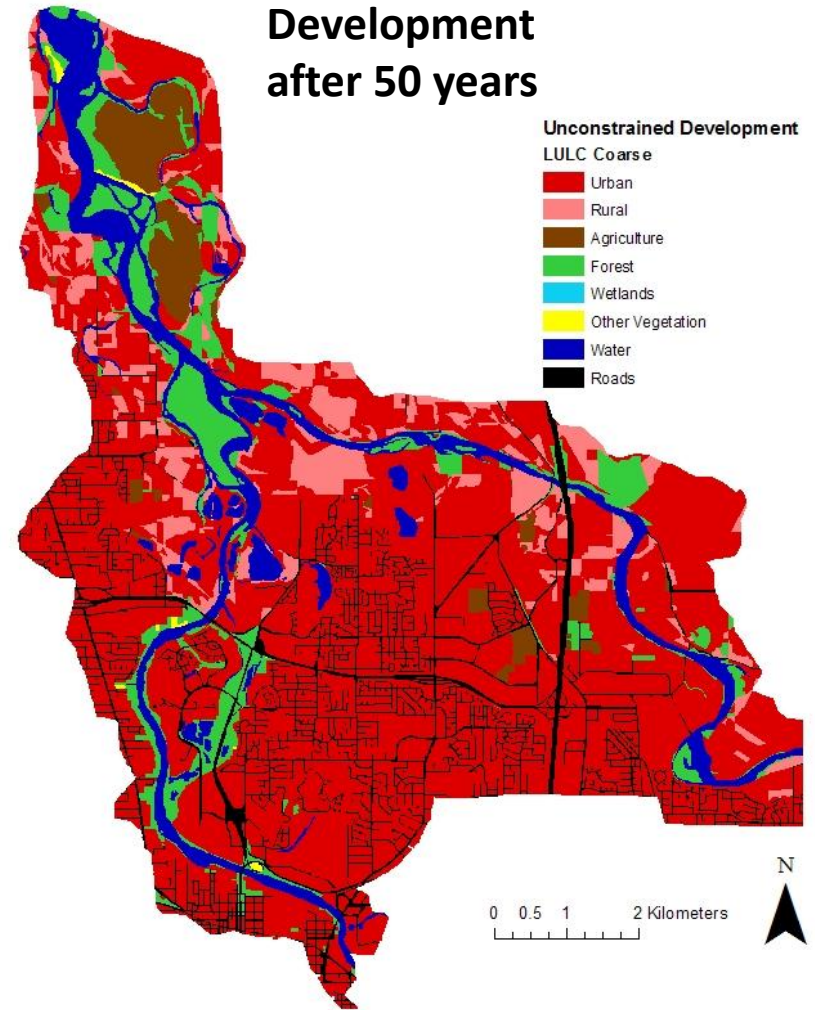


Willamette Basin, Oregon

Initial Conditions

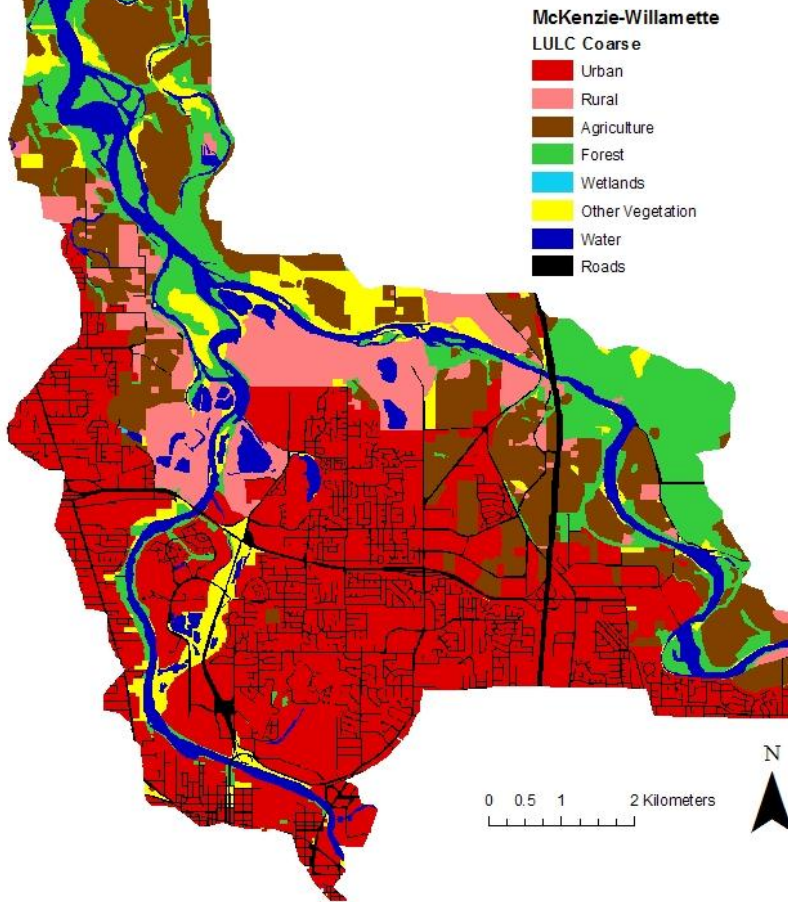


Development after 50 years

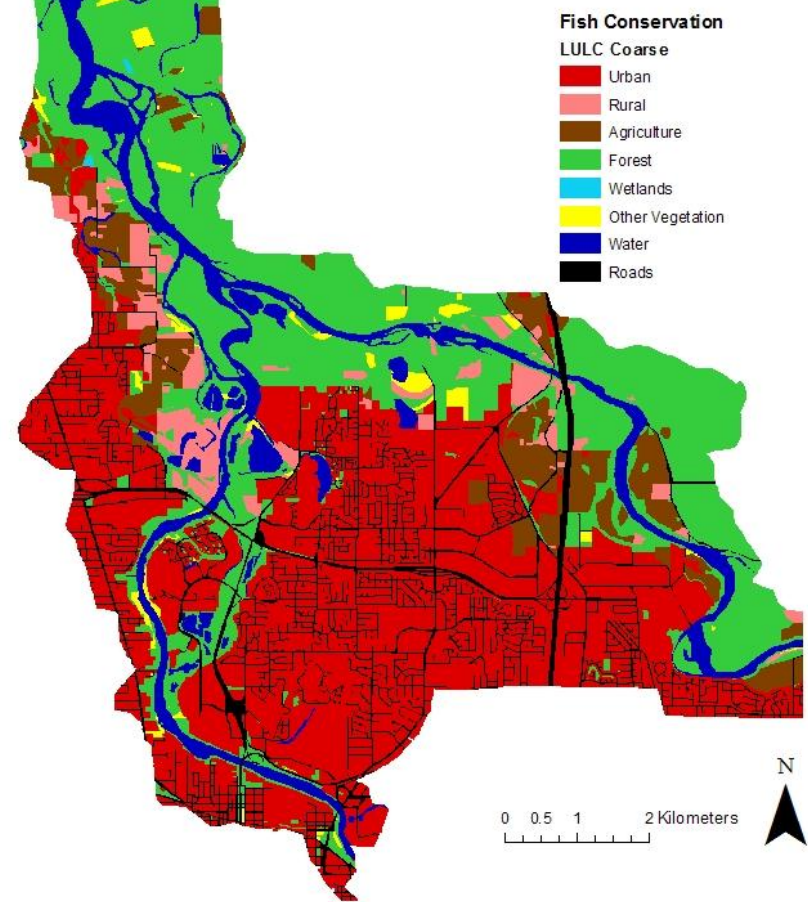


**Options at the northern boundary of Eugene-Springfield, Oregon
Watch the patterns of red (developed) and green (forested)**

Initial Conditions



Conservation strategies after 50 years



**Options at the northern boundary of Eugene-Springfield, Oregon
ENVISION shows the impact of land use policies and practices.**

A Landscape Perspective: What Does Success Look Like?

- **Builds from the four criteria** *Success is a process, not a state of completion, and demands unparalleled communication and cooperation*
...I address myself... to the general intelligence of observing and thinking men; and ... my purpose is rather to make practical suggestions than to indulge in theoretical speculations ...
George P. Marsh (1868)
- **Works in a fully developed adaptive management framework**
- **Engages the public, uses transdisciplinary science, builds adaptive capacity, collaborates and governs at a landscape scale**
 - Adds diversity measures with abundance
 - Evaluates and modifies land use patterns with a focus on diversity
 - Makes diversity part of adapting to climate change, dealing with emerging novel ecosystems, managing globalization, and coping with growth and development

Address socioeconomic and ecological issues simultaneously and with an integrated approach; be mindful that the Columbia Basin sustains the well-being of its people as well as its natural resources

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Thank you!



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Full Report Available Online: <http://www.nwcouncil.org/library/report.asp?d=640>

ISRP Improves Adaptive Management

- Review of Research, Monitoring and Evaluation and Artificial Production Projects, June 2011 (with July 2011 addition)
- *Retrospective Report 2007: Adaptive Management in the Columbia River Basin, ISRP 2008-04 (April 2008);*
- *ISRP 2006 Retrospective Report, ISRP 2007-1 (March 2007);*
- *Independent Scientific Review Panel's Retrospective Report 1997-2005, ISRP 2005-14 (August 2005).*

